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Non-infected central venous catheters in hemodialysis patients are not associated with inflammation

To the Editor: A recent study, conducted by Goldstein *et al.*, showed that the serum C-reactive protein (CRP) level of patients who underwent hemodialysis (HD) with non-infected central venous catheters (CVCs) was higher than that of those who underwent HD via native arteriovenous fistulas (AVFs). In these patients, betadine solution was used for exit-site care.[1] Our aim was to evaluate the changes in the serum CRP levels of HD patients who underwent dialysis via native AVF (AVF-1), then via temporary tunneled CVC for AVF dysfunction, and again via AVF (AVF-2). Eighteen tunneled jugular CVCs in 18 HD patients were included. Heparin lock and alcoholic-chlorhexidine solution was used for exit-site disinfection. The mean CRP values during the three periods were not different (Figure 1). A cross-sectional study in 225 HD patients in December 2008 showed that the median serum CRP levels of patients using AVF (89%) and CVC (11%) were 7 (IQR 3–20) and 10 (3–21) mg/l, respectively (NS). We have previously shown that the incidence of catheter-related bacteremia decreased from 1.1 to 0.2/1000 catheter day during 1994–1997 and 2004–2007 when betadine was substituted with alcohol-chlorhexidine solution.[2] As this solution was more efficient than betadine in our hands, we hypothesized that the difference in the findings reported in the two studies may be attributed to the differences in the solution used. However, to confirm this hypothesis, a controlled study should be conducted in order to compare these two protocols.

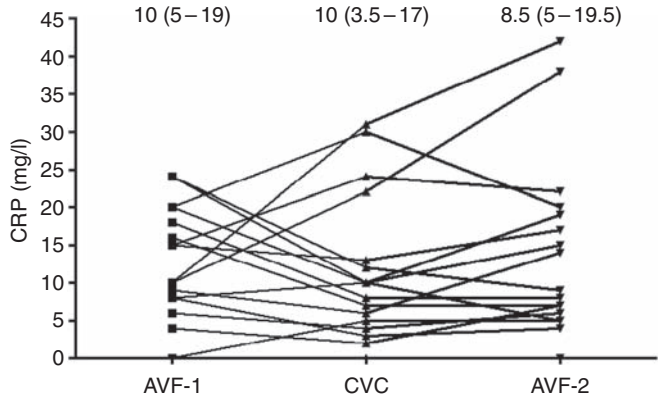

Figure 1 | CRP evolution. Changes in serum C-reactive protein (CRP) levels of patients undergoing dialysis first via arteriovenous fistula (AVF-1), then via central venous catheter (CVC), and again via arteriovenous fistula (AVF-2). Median (interquartile range) values are shown.

1. Goldstein SL, Ikizler TA, Zappitelli M *et al.* Non-infected hemodialysis catheters are associated with increased inflammation compared to arteriovenous fistulas. *Kidney Int* 2009; **76**: 1063–1069.
2. Jean G, Vanel T, Bresson E *et al.* An efficient strategy to decrease the central venous catheter-related adverse events rate in haemodialysis patients. *Nephrol Therap* 2009; **5**: 280–286.

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The Authors Reply: We thank Dr Jean and colleagues[1] for their interest in our work.[2] They question our findings of increased C-reactive protein (CRP) using a non-infected hemodialysis catheter. The findings of their study contradict ours, and all previous studies, which reported an increase in the inflammation associated with catheter use compared with arteriovenous fistulas.[3–5] One study[4] assessed 128 prevalent chronic hemodialysis patients (2405 CRP measurements), finding catheter presence was independently associated with CRP level, and catheter placement or removal was associated with an increase or improvement in CRP level, respectively. Our study was the first to evaluate non-infected catheters as a sole mechanism for inflammation, adjusted for potential confounding variables. The authors hypothesize the reason that they did not observe increased CRP in catheter patients was because of different antiseptic use for exit site care. They propose a controlled study to directly address the potential for inflammation induction between two protocols. The information accumulated in the literature makes such a study unnecessary and potentially unethical. Even though the authors' hypothesis is correct, we are concerned their letter implies catheter use is acceptable based on their small study. Our group, and others, believes catheters should be avoided in dialysis patients. In addition to inflammation, the increase in morbidity and mortality associated with catheters is well established.[2] A recent paper 'Ethical and Legal Obligation to Avoid Long-Term Tunneled Catheter Access' reminds us the first duty of a physician is to do no harm.[6] In our opinion the continued catheter use is harmful.

1. Jean G, Vanel T, Chazot C. Non-infected central venous catheters in hemodialysis patients are not associated with inflammation. *Kidney Int* 2010; **78**: 709.
2. Goldstein SL, Ikizler TA, Zappitelli M *et al.* Non-infected hemodialysis catheters are associated with increased inflammation compared to arteriovenous fistulas. *Kidney Int* 2009; **76**: 1063–1069.